

## 2.3 Working Units

### A. Roadway Design Files

The Caltrans standard design presentation software (MicroStation) defines a design file by U.S. Survey Foot with Master Unit set to “Feet” and Sub Unit set to “Tenths.” The resolution for roadway design files is “10,000 per Distance Foot.” These standard values define the size of the working area of the design file. Caltrans roadway seed files have the settings shown below.

The image shows the 'Design File Settings' dialog box with the 'Working Units' category selected in the left-hand list. The main area is titled 'Modify Working Unit Settings' and contains two sections: 'Linear Units' and 'Advanced Settings'. In the 'Linear Units' section, the 'Format' is set to 'MU', 'Master Unit' is 'Feet', 'Sub Unit' is 'Tenths', and 'Accuracy' is '0.123'. There are input fields for 'Label' with 'FT' and 'TN' entered. Buttons for 'OK', 'Cancel', and 'Custom' are present. The 'Advanced Settings' section displays 'Resolution: 10000 per Distance Foot', 'Working Area: 1.70591E+008 Miles', 'Solids Area: 81.3442 Miles', and 'Solids Accuracy: 4.29497E-006 Feet', with an 'Edit' button. At the bottom, there is a 'Focus Item Description' field with the text 'Select category to view.'

Category
Active Angle
Active Scale
Angle Readout
Axis
Color
Element Attributes
Fence
Grid
Isometric
Locks
Snap
Stream
Views
<b>Working Units</b>

### Modify Working Unit Settings

**Linear Units**

Format: MU  
Master Unit: Feet  
Sub Unit: Tenths  
Accuracy: 0.123

Label: FT  
Label: TN

Custom

**Advanced Settings**

Resolution: 10000 per Distance Foot  
Working Area: 1.70591E+008 Miles  
Solids Area: 81.3442 Miles  
Solids Accuracy: 4.29497E-006 Feet

Edit

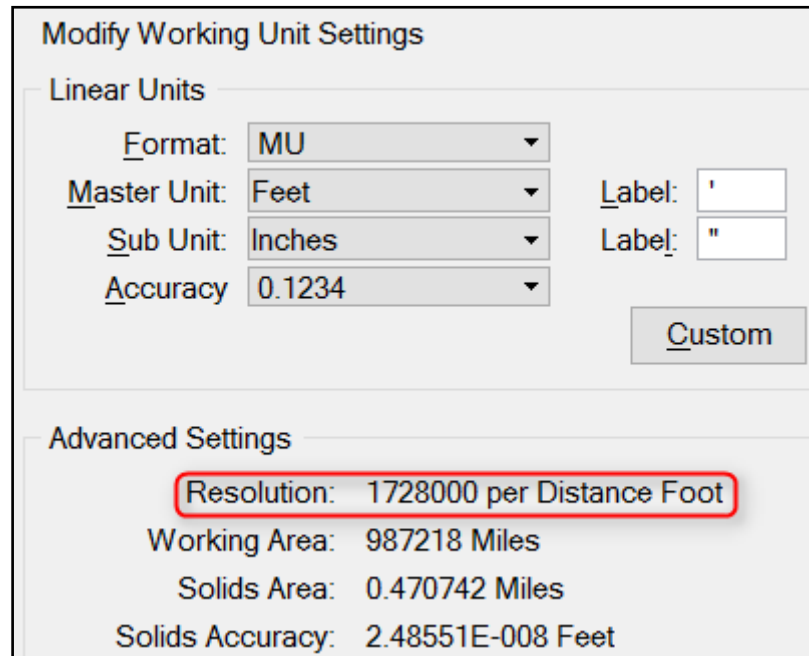
Focus Item Description  
Select category to view.

OK Cancel

To maintain the California coordinate system in design files for all roadway projects, the resolution must remain at 10,000. Changing this value will change the coordinates and the linear measurement of elements.

## B. Structure Design Files

Design files for Structures bridge design are based on 1'-0" = 1'-0" with the Master Unit set to "Feet" and the Sub Unit set to "Inches." The resolution and working area are shown below:



**Modify Working Unit Settings**

**Linear Units**

Format: MU  
Master Unit: Feet  
Sub Unit: Inches  
Accuracy: 0.1234

Label: '  
Label: "

Custom

**Advanced Settings**

Resolution: 1728000 per Distance Foot  
Working Area: 987218 Miles  
Solids Area: 0.470742 Miles  
Solids Accuracy: 2.48551E-008 Feet

The resolution and working area for a Structures design file differs from a roadway design file.